



L.K Machinery Corp.

TC series



L.K. Machinery Corp. (TAIWAN)

No.30, Keyuan Rd., Xitun Dist., Taichung City 40763, Taiwan (R.O.C.)

TEL: (+886) 4 2461 9797 FAX: (+886) 4 2461 1555

E-mail: lktw_sales@lkmachinery.com.tw

CE ISO 9001
ISO 14001

TC201904(E)

Built with Passion for Quality and Efficiency

LK Tapping Center Series is engineered for quality mass production with extraordinary yield rate. Led by a Seasoned Machining Center Design Expert, all LK Tapping Centers are designed for accuracy and reliability.

TC-510



TC-710

Unmatched Productivity

From structural analysis to actual metal cutting, each Tapping Center produced by LK, displays the optimum performance that meets your most rigorous demands.

Speed is Everything



The 3 axes' motors are direct coupled with servo motors. The backlash-free design powers the axial motion to its optimum level, featuring no noise, low temperature rise and the high accuracy.



For every high productivity workshop, every second counts. To reach the maximum cutting performance, LK TC series machine employs a low inertia spindle motor* featuring high torque output during low speed range, as well as high acceleration/deceleration output, to reduce tapping time a minimum.

Spindle Acc/Dec from 0 – 15000 rpm: 1.4 Sec.

*Optional



TC-1200



Two Machines in One

The design of traveling column TC-1200 allows two separate working areas that function the same as a pallet changer, or alternatively a large long work piece can be machined in one setup.

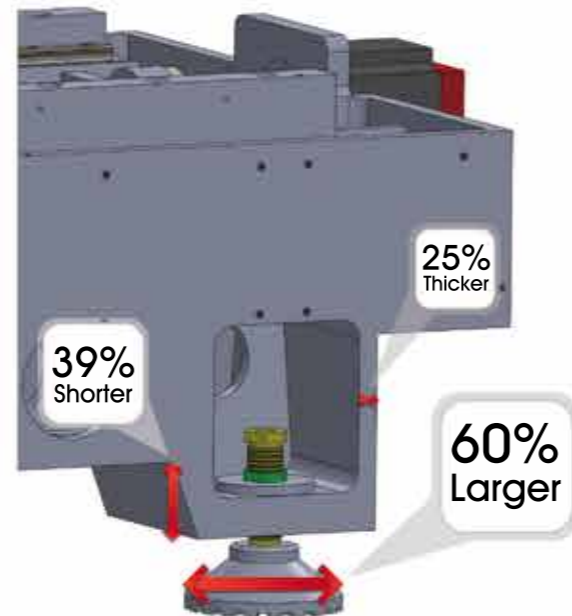
Wide Application Range

The powerful performance of LK Tapping Centers is widely applied in automobile, computer, communication electronics, watch, jewelry, aerospace and medical equipment industries.

Enlarged Foundation Block and Strengthened Machine Base



Nearly **30% thicker!**



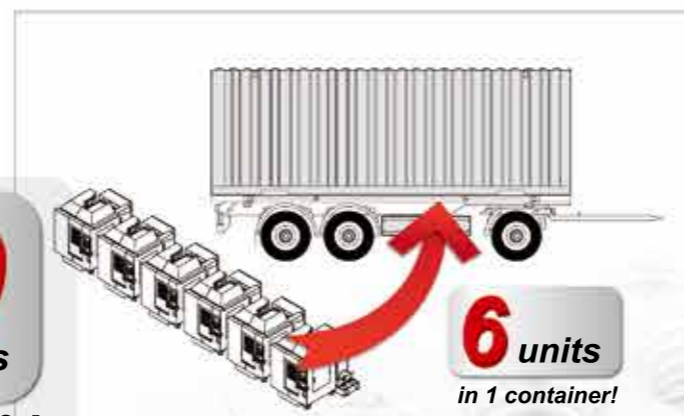
LK engineering team focuses on every small detail to optimize machine's rigidity and reliability.

Maximum Cutting Area with Minimum Floor Space Required



50 machines

5000 ft²!

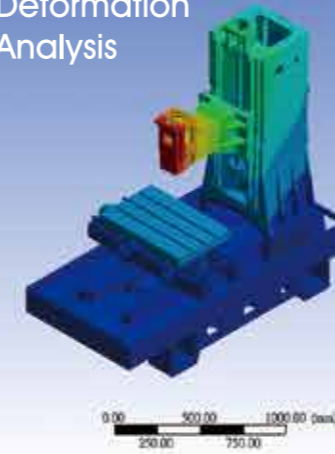


6 units in 1 container!

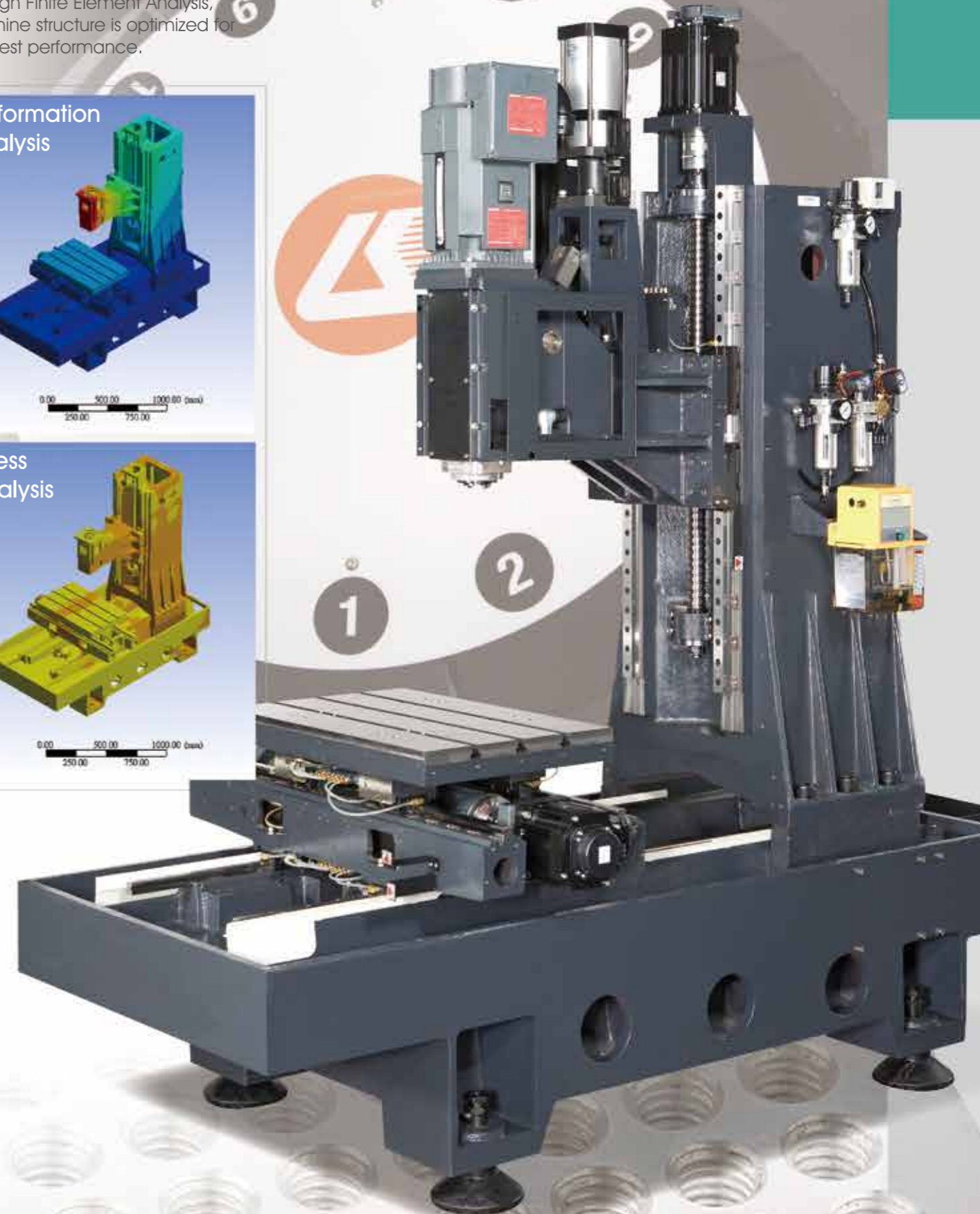
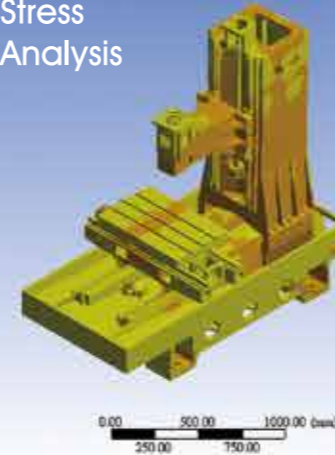
FEA Design

Through Finite Element Analysis, machine structure is optimized for the best performance.

Deformation Analysis



Stress Analysis





No-Counter Balance Design

An oversized Z Axis motor, direct coupled with ball screw, eliminates the need to have a mechanical counter balance. This design produces better surface finishes so best cutting surface finish can be achieved.



Smooth Motion

Linear motion guideways and pre-tensioned ball screws on X/Y/Z axes are installed to deliver more torque and thrust, featuring low thermo deformation and high dynamic positioning accuracy.



Z Axis Flexible Cover

The telescopic covers on 3 axes are specially designed to protect ball screws and linear guideways under the high rapid traverse of max. 48 (to 60 M/min)(opt.) per minute.

Rear Chip Disposal

Cutting chips are efficiently conveyed to the rear side of machine with large flow coolant, and with the lift-up type chip conveyor (optional), chip removal is reliable and efficient.



Chips

Removing cutting chips efficiently from the cutting area is part of a critical know-how concerning stable long time operation. LK understands the importance of this issue, and designs the machine with various chip flushing / conveying mechanism to meet the demands.

Reliable ATC Unit

TC-510/710 is standard equipped with Turret type ATC; while TC-1200 is fitted with Arm Type.

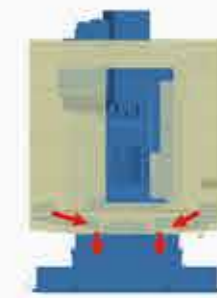
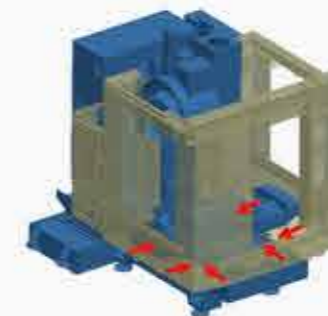
The Turret Type ATC provides rapid tool change time of 2,3 and Arm Type (Servo) 1.7 second (opt.) with impeccable reliability, suitable for high productivity 7/24 operation.

Design and mechanism tested over

400,000 times.

Complete Chip Protection

Our new generation telescopic cover effectively prevents the ingress of chips from entering the 3 axes transmission structure.



Isometric view

Front view

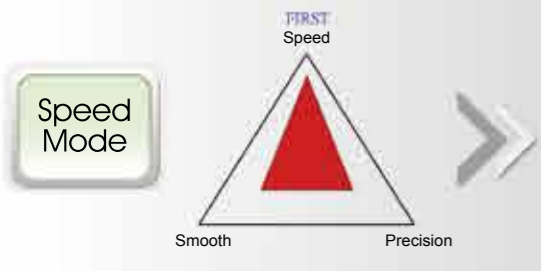
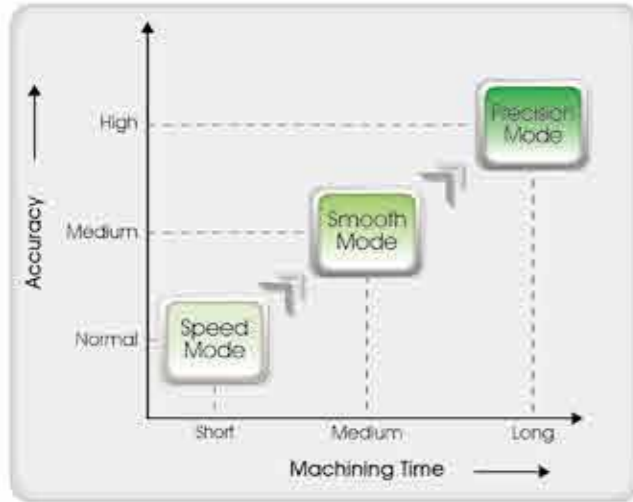
Right view

Custom Parameter Package Setting for Multiple Machining Modes

The CNC system offers 3 customer defined cutting modes. With these modes, proven motion control cutting parameters can be recalled from a standard library.

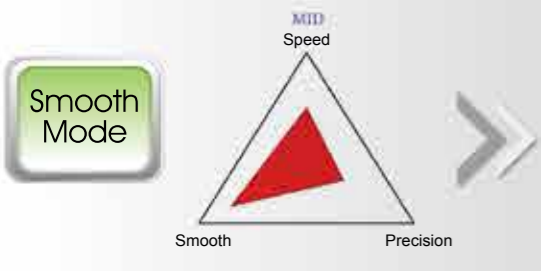


These user friendly controller functions allow customers to switch jobs without the need to change numerous motion control's system parameters.



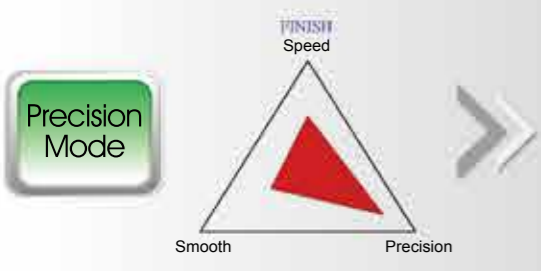
Speed Mode: More Speed, Less Time

Suitable for:
Automobile / Motorcycle parts
Machinery components
Aluminum Parts
Smart phone cases
Work pieces of mass production



Smooth Mode: Balance of Speed and Time

Suitable for:
Optical electronics
Forging molds
Glass molds
Shoe molds
Work pieces that require good surface finishes



Accuracy Mode: Extremely High Precision

Suitable for:
Medical equipments
Aerospace parts
Semi-conductor related parts
5-axis machining
All hard milling parts

Cutting Performance

LK Tapping Centers feature extraordinary cutting capability. Via multiple parameter settings from the CNC, the work piece can be made according to the most demanding jobs.



DRILLING CAPACITY - 1

Average Tact Time / Per Hole	1.52 Sec.	
Tool	Ø 0.5 mm Drill	
Material	AL 6061	S45C
Spindle Speed	16000 rpm	9600 rpm
Feedrate	380 mm/min.	170mm/min
Depth	4 mm	4mm



DRILLING CAPACITY - 2

Average Tact Time / Per Hole	1.52 Sec.	
Tool	Ø 20 mm Drill	
Material	AL 6061	S45C
Spindle Speed	810 rpm	500 rpm
Feedrate	410 mm/min.	200 mm/min.
Depth	30 mm	30 mm



TAPPING CAPACITY - 1

Average Tact Time / Per Hole	2.2 Sec.	
Tool	M1 X P0.25 Tap	
Material	AL 6061	S45C
Spindle Speed	6000 rpm	2000 rpm
Feedrate	1500 mm/min.	500 mm/min.
Depth	6 mm	6 mm

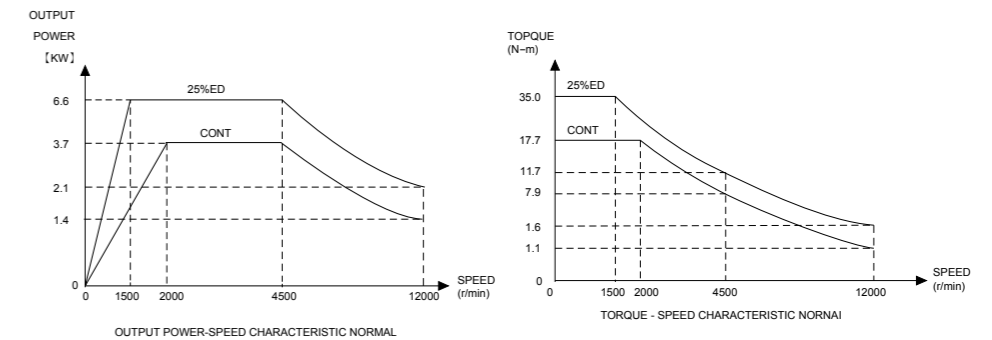


TAPPING CAPACITY - 2

Average Tact Time / Per Hole	2.2 Sec.	
Tool	M18 X P2.5 Tap	
Material	AL 6061	S45C
Spindle Speed	400 rpm	300 rpm
Feedrate	1000 mm/min.	750 mm/min.
Depth	30 mm	30 mm

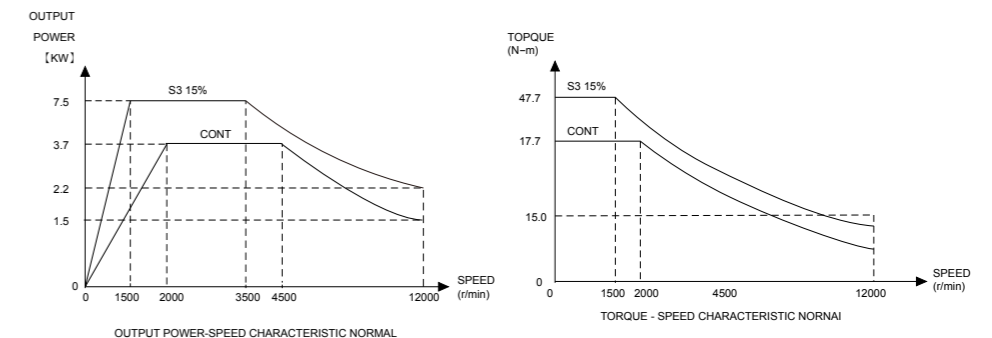
Power Chart

Mitsubishi
SJ-DJ5.5/120-02



OPT.

Fanuc
βi13



	Surface Finish	Time	Curve Accuracy (Radius Tolerance)
First	Rough	Fast	0.101 mm
Mid	Medium	Medium	0.059 mm
Finish	Excellent	Slow	0.005 mm

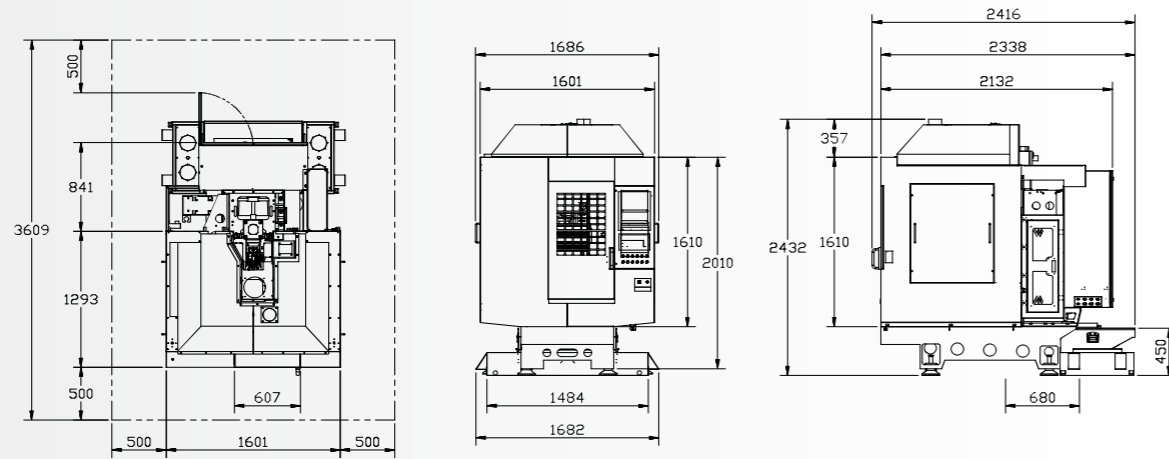


Roundness: 4.5 μm

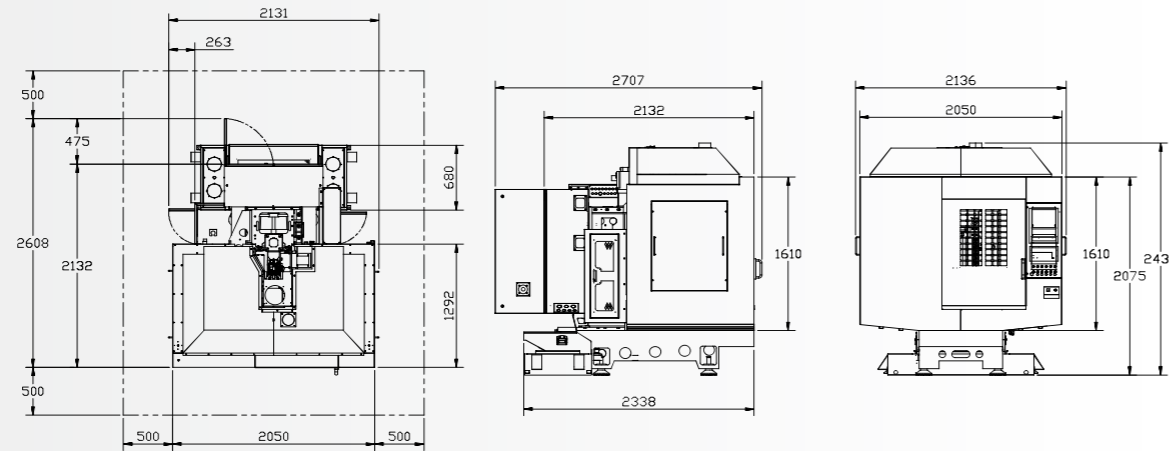
All 3 ball screws are Laser inspected. The backlash thoroughly checked and automatically compensated by the CNC, enhancing the maximum positioning as well as repeatability accuracy of the machine.

For machine's overall geometric accuracy, the Ball Bar Test is conducted on every machines to ensure the optimum cutting performance in roundness, squareness, concentricity, parallelism, and perpendicularity.

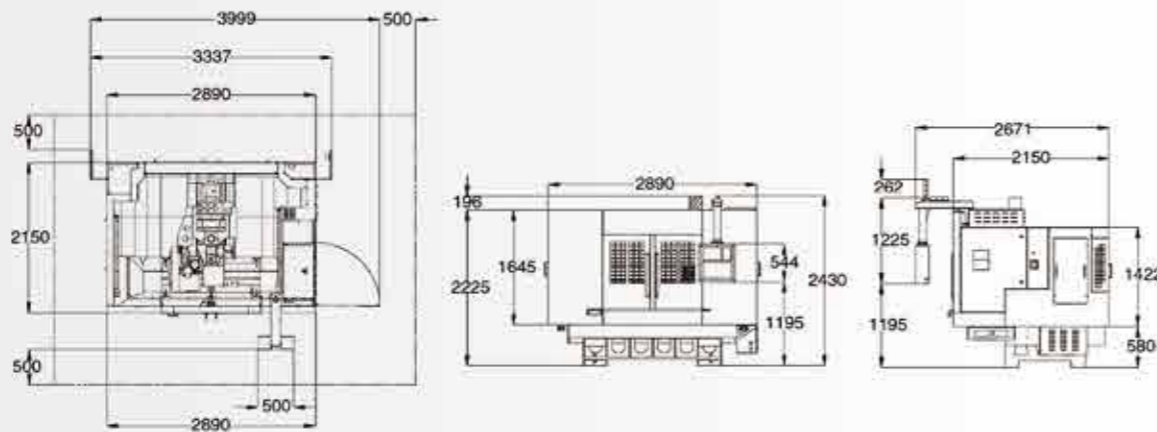
TC-510



TC-710



TC-1200



SPECIFICATIONS

Model	Unit	TC-510	TC-710	TC-1200
CNC Control System	-	Mitsubishi M80	Mitsubishi M80	Mitsubishi M80
3 axis Travel				
X axis Travel	mm	510	710	410/1200
Y axis Travel	mm	420	420	410
Z axis Travel	mm	350	350	420
Distance from Spindle Center to Table	mm	180~530	180~530	200~620
Spindle				
Spindle Speed	rpm	DDS 12,000	DDS 12,000	DDS 12,000
Spindle Nose	BT	#30	#30	#30
Spindle Motor(Cont./30min)	kw	3.7 / 5.5	3.7 / 5.5	3.7 / 5.5
Table				
Table Size	mm	650 x 420	850 x 420	1350 x 410
T Slot(Width x No. x Pitch)	mm	14 x 3 x 100	14 x 3 x 100	14 x 3 x 100
Max. Table Capacity	kg	250	250	300 x 2
Rapid Travel				
Rapid Travel(X/Y/Z)	m/min	48 / 48 / 48	48 / 48 / 48	48 / 48 / 48
Cutting Speed Rate	m/min	1-20	1-20	1-20
X/Y/Z Feed Motor	kw	1.5 / 1.5 / 2.2	1.5 / 1.5 / 2.2	3.5 / 3.5 / 3.5
Tool Magazine				
Tool Change Type	-	Turret	Turret	Arm
Tool Capacity	set	16	16	20
Max. Tool Weight	kg	3	3	3
Max. Tool Length Distance	mm	200	200	200
Max. Tool Diameter	mm	Ø100 / Ø140	Ø100 / Ø140	Ø75 / Ø150
Tool Change Time(T-T)	sec	2.3	2.3	2.3
Tool Change Time(C-C)	sec	3	3	3.5
Others				
Compress Air Supply	kg/cm ²	5~7	5~7	5~7
Machine Size(LxWxH)	mm	2600 x 4100 x 2400	3050 x 4100 x 2400	4105 x 2714 x 2498
Net Weight	kg	2,800	2,950	6,200

*All specifications design and characteristics shown in this catalogue are subject to change without prior notice.

*L.K. Machinery Corp will not be legally responsible for any unauthorized modification on the machine or other equipment.

Standard Equipment

- Mitsubishi M80
- DDS 12,000rpm
- BT-30
- MAS P30-1
- Spindle Tool Change Air Blow
- Automatic Lubrication System
- Side Flush System
- Separate Hand Wheel (MPG)
- Heat Exchanger
- Full Enclosure Splash Guard
- Tri-color Indicator Lamp
- Working Light
- Tool Box
- Leveling Bolts & Blocks
- Safty Door

Optional Equipment

- Siemens 828D
- Fanuc Oi-MF
- DDS 15,000/20,000rpm
- Turret Type 21 tools (Servo) (TC-510/710)
- Arm Type 20 tools (Servo) (Z axis Travel 530mm) (TC-510/710)
- CTS
- Spindle Oil Cooler
- Rapid Travel 60/60/60m/min
- 4th axis CNC Rotary Table
- 5th axis CNC Tilting Table
- Automatic Tool Length Measurement System
- Link Type Chip Conveyor
- Column Add 150/250mm
- Auto Door